California Assessment of Student Performance and Progress

California Science Test
Practice Test
Scoring Guide

Grade Five

CAST Practice Test Scoring Guide—Grade Five

Table of Contents

Introduction to Practice Test Scoring Guide

This California Science Test (CAST) practice test scoring guide offers details about the items, student response types, correct responses, and related scoring considerations for the practice test items. These items have been selected to show some of the new approaches to measuring the California Next Generation Science Standards (CA NGSS) that can be found in the assessment. The practice test items are not fully representative of all possible item types included in the CAST. The practice test covers a selection of items from performance expectations assessed in grade five.

This scoring guide should be used alongside the online practice tests, which can be accessed at http://www.caaspp.org/practice-and-training/index.html. Annotated responses are also available to help explain the rationale for each score point on selected constructed response items from the practice test at https://www.caaspp.org/ta-resources/practice-training.html.

The following information is presented in a metadata table. Metadata contains specific information about each item including the alignment of the item with the CA NGSS standards.

Item: The question number that corresponds to the question as it appears in the practice test

Key: Represents the correct answer(s) to the item or question and includes the score point value for the item and its parts (Items are worth either one or two points. For some technology-enhanced items, a screen capture of the correct answers is included. Exemplars and rubrics are provided for constructed response items.)

Performance Expectations (PE) Code: References the standards that describe what students should know and be able to do

Science and Engineering Practices (SEP): Descriptions of behaviors that students engage in as they investigate the natural world and design solutions

Disciplinary Core Ideas (DCI): Essential ideas in the science disciplines that all students should understand

Crosscutting Concepts (CCC): Interdisciplinary skills students should exhibit that unify the study of science and engineering through common application across fields

Item-Level Claim Statement (ILCS): A brief statement that illustrates how an item aligns with the PE
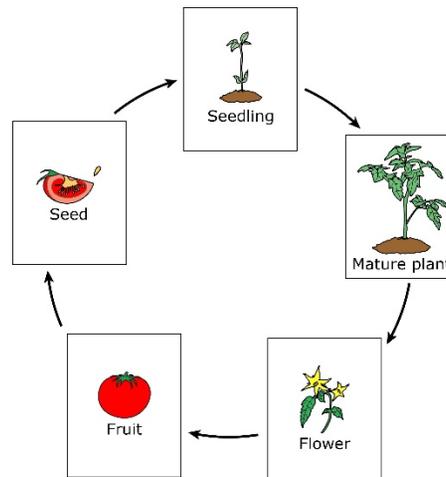
Example of Metadata

Item	Key	PE	SEP	DCI	CCC	ILCS
1	A (1 point)	4-ESS2-1	3. Planning and Carrying Out Investigations	ESS2.A Earth Materials and Systems	2. Cause and Effect	Describe and identify observations that are relevant to investigating the effects of weathering or the rate of erosion.

Grade Five Practice Test Items

Item	Key	PE	SEP	DCI	CCC	ILCS
1	A (1 point)	4-ESS2-1	3. Planning and Carrying Out Investigations	ESS2.A Earth Materials and Systems	2. Cause and Effect	Describe and identify observations that are relevant to investigating the effects of weathering or the rate of erosion.
2	Two-point item: **Part A:** Clockwise order of the images: Mature plant, flower, fruit (1 point) **Part B:** C (1 point)	3-LS1-1	2. Developing and Using Models	LS1.B Growth and Development of Organisms	1. Patterns	Complete a model to describe the life cycle of a tomato plant. Students determine how the environmental needs of the tomato plants can be met.

Screen capture item 2 Part A key.

Item metadata table continuation showing items 3–7

Item	Key	PE	SEP	DCI	CCC	ILCS
3	First, third, and fourth options (1 point)	5-PS1-4	3. Planning and Carrying Out Investigations	PS1.B Chemical Reactions	2. Cause and Effect	Identify the properties to observe or measure that provide evidence of chemical change that would be useful to the investigation.
4	Two-point item: **Part A:** D (1 point) **Part B:** the more energy can be transferred to the stopper (1 point)	4-PS3-1	6. Constructing Explanations and Designing Solutions	PS3.A Definitions of Energy	5. Energy and Matter	Use a model to construct an explanation of how the speed of an object is related to its energy.
5	D (1 point)	4-ESS3-2	6. Constructing Explanations and Designing Solutions	ETS1.B Developing Possible Solutions	2. Cause and Effect	Select the most appropriate design solution for a volcanic warning system.
6	B (1 point)	5-PS1-1	2. Developing and Using Models	PS1.A Structure and Properties of Matter	3. Scale, Proportion, and Quantity	Develop a model that correctly portrays evaporation or condensation as the movement of particles in the air from or to a surface, respectively.
7	C (1 point)	5-LS2-1	2. Developing and Using Models	LS2.B Cycles of Matter and Energy Transfer in Ecosystems	4. Systems and System Models	Complete an incomplete model of a food web.

Item metadata table continuation showing items 8–9

Item	Key	PE	SEP	DCI	CCC	ILCS
8	C (1 point)	5-ESS1-2	4. Analyzing and Interpreting Data	ESS1.B Earth and the Solar System	1. Patterns	Use the data to correctly identify patterns and make a prediction about shadow movements caused by the changing daily position of the sun.
9	Exemplars and rubric provided below.	3-LS4-2	6. Constructing Explanations and Designing Solutions	LS4.B Natural Selection	2. Cause and Effect	Describe an advantage that character variation may confer on an individual hare in an arctic ecosystem throughout the year.

Exemplars and rubric for item 9:

2 point

Exemplar(s):

White fur is good camouflage in the snow, so the arctic hare can hide more easily from predators.

OR

When the summer ends and winter comes the color changes from brown to white so the hare can hide from predators because it blends into the white snow.

OR

Rubric continues on the next page.

Rubric continues from previous page.

The brown fur would be easily seen by a mountain lion or fox, it is good that the fur changes color from brown to white so they can hide in the snow.

Rubric:

The response indicates that changing from a brown fur color to white fur coat color helps arctic hares hide (or be camouflaged) in the snow.

AND

The response indicates that white fur coat color protects arctic hares from predators.

1 point

Exemplar(s):

The white fur helps arctic hares hide in the snow.

OR

The white fur helps prevent the arctic hare from being eaten.

OR

If the fur stayed brown in the winter, the hare couldn't hide from any predator that would be after it.

Rubric:

Rubric continues on the next page.

Rubric continues from previous page.

The response indicates that white fur coat color helps arctic hares hide (or be camouflaged) in the snow.

OR

The response indicates that white fur coat color protects the hare from predators.

0 point

Exemplar(s):

The white fur is lighter so the hare can run away faster.

OR

The white fur helps the arctic hares survive in the winter.

OR

*&YTT%$#$D

OR

I don't know; I was never taught this.

Rubric:

0-point should be awarded if a student attempts to answer the prompt but the response is incorrect or too vague (insufficient information provided) to receive credit

A score of 0 should also be given to responses that consist only of:

Rubric continues on the next page.

Rubric continues from previous page.

No relevant content provided

- no response is provided (e.g., blank)

- random keystrokes or nonsense verbiage

- punctuation mark(s) (e.g., ".")

Student's opinion of the test

Direct copy of the stimulus without any attempt to answer

Opinions or comments about random topics

I don't know, IDK (without further elaboration)

Responses that go on to provide an answer to the prompt should be scored based on the relevant part of the response.

Item metadata table continuation showing items 10–14

Item	Key	PE	SEP	DCI	CCC	ILCS
10	**Row 1:** Quiet, Least harmful to the environment **Row 2:** Low cost (1 point)	3-5-ETS1-2	6. Constructing Explanations and Designing Solutions	ETS1.B Developing Possible Solutions	N/A	Identify which wants/needs the design solution meets and which it failed to meet when sampling aquatic organisms.
11	B (1 point)	5-ESS2-1	2. Developing and Using Models	ESS2.A Earth Materials and Systems	4. Systems and System Models	Identify the factor that is needed to accurately model melting glaciers.
12	battery (1 point)	4-PS3-4	6. Constructing Explanations and Designing Solutions	PS3.B Conservation of Energy and Energy Transfer	5. Energy and Matter	Select the design solution that best tests a simple electrical circuit.
13	**First drop-down menu:** frozen **Second drop-down menu:** lakes (1 point)	5-ESS2-2	5. Using Mathematics and Computational Thinking	ESS2.C The Role of Water in Earth's Surface Processes	3. Scale, Proportion, and Quantity	Identify patterns or relationships revealed in the diagrams or graphs about the hydrosphere.
14	First, second, and fifth options (1 point)	3-5-ETS1-2	6. Constructing Explanations and Designing Solutions	ETS1.B Developing Possible Solutions	N/A	Generate a design pattern that fits within the parameters of the foil boat competition while still meeting the criteria for success.

Item metadata table continuation showing items 15–16

Item	Key	PE	SEP	DCI	CCC	ILCS
15	Fourth and fifth options (1 point)	3-PS2-2	3. Planning and Carrying Out Investigations	PS2.A Forces and Motion	1. Patterns	Identify the plan that will provide the best evidence of a pattern that can be used to make a prediction about future motion of a swing.
16	Exemplars and rubric provided below.	3-LS3-2	6. Constructing Explanations and Designing Solutions	LS3.A Inheritance of Traits	2. Cause and Effect	Use data to support an explanatory account of the effects watering has on plant growth.

Exemplars and rubric for item 16:

2 point

Exemplar(s):

The plant that got watered every day, grew taller and had more flowers than the plant that only got watered once a week. That plant was short and had only a few flowers. So, water was the factor that made the plants different.

OR

Watering the plants daily compared to once a week, made the plants grow taller and have more flowers, than only watering them once a week. That plant didn't grow and didn't produce a lot of flowers.

Rubric continues on the next page.

Rubric continues from previous page.

Rubric:

The response includes that the traits for plant 1 are tall with lots of flowers and the traits for plant 2 are short with few flowers.

AND

The response includes that water is the factor that influences the traits.

1 point

Exemplar(s):

Plant 1 was watered daily and grew tall and had a lot of flowers.

OR

Watering plant 1 every day gave the plant what it needed to grow tall.

OR

Plant 2 was only watered once a week, so it didn't grow tall and didn't have a lot of flowers.

OR

The environment can affect the plants traits by having a lot of flowers or only a few flowers or by growing tall or staying short.

Rubric continues on the next page.

Rubric:

The response includes that the traits for plant 1 are tall with lots of flowers and the traits for plant 2 are short with few flowers.

OR

The response includes that water is the factor that influences the traits.

NOTE: 1 score point can be given to responses that state the traits of one plant (with no comparison to the other plant) and include water being that factor.

0 point

Exemplar(s):

Water supplies the plants with energy so they can grow and produce flowers.

OR

Plant 2 only got food once a week, that's not enough for it to grow.

OR

Less water is better, so the plants don't drown.

OR

*&YTT%$#$D

Rubric continues on the next page.

Rubric continues from previous page.

OR

I don't know; I was never taught this.

Rubric:

0-point should be awarded if a student attempts to answer the prompt but the response is incorrect or too vague (insufficient information provided) to receive credit

A score of 0 should also be given to responses that consist only of:

No relevant content provided

- no response is provided (e.g., blank)

- random keystrokes or nonsense verbiage

- punctuation mark(s) (e.g., ".")

Student's opinion of the test

Direct copy of the stimulus without any attempt to answer

Opinions or comments about random topics

I don't know, IDK (without further elaboration)

Responses that go on to provide an answer to the prompt should be scored based on the relevant part of the response.

Additional annotated samples for this prompt can be found at https://www.caaspp.org/ta-resources/practice-training.html.

Item metadata table continuation showing items 17–19

Item	Key	PE	SEP	DCI	CCC	ILCS
17	Two-point item: **Part A:** **First drop-down menu:** June **Second drop-down menu:** January (1 point) **Part B:** C (1 point)	3-ESS2-1	4. Analyzing and Interpreting Data	ESS2.D Weather and Climate	1. Patterns	Use data represented in tables and graphical displays to describe typical weather conditions expected during a particular season.
18	C (1 point)	3-LS4-4	7. Engaging in Argument from Evidence	LS2.C Ecosystem Dynamics, Functioning, and Resilience	4. Systems and System Models	Evaluate the competing solutions and select the most appropriate one given certain criteria and constraints for reversing the decrease of the frog population.
19	Third and fourth options (1 point)	3-5-ETS1-1	1. Asking Questions and Defining Problems	ETS1.A Defining and Delimiting Engineering Problems	N/A	Select relevant constraints on potential solutions for the tower design challenge.

Item metadata table continuation showing items 20–22

Item	Key	PE	SEP	DCI	CCC	ILCS
20	**Row 1:** Needs to stay the same **Row 2:** Needs to be changed **Row 3:** Needs to stay the same (1 point)	3-5-ETS1-3	3. Planning and Carrying Out Investigations	ETS1.B Developing Possible Solutions	N/A	Identify factors that would need to be controlled to get a satisfactory measure of the functioning of the prototype.
21	**Row 1:** Model of erosion by running water, Model of erosion by glaciers **Row 2:** Model of erosion by running water **Row 3:** Model of erosion by running water, Model of erosion by glaciers **Row 4:** Model of erosion by glaciers (1 point)	5-ESS2-1	2. Developing and Using Models	ESS2.A Earth Materials and Systems	4. Systems and System Models	Complete the model by incorporating relevant components for different types of erosion.
22	A (1 point)	5-ESS3-1	8. Obtaining, Evaluating and Communicating Information	ESS3.C Human Impacts on Earth Systems	4. Systems and System Models	Identify the effects of a given human activity on the environment.

Item metadata table continuation showing items 23–27

Item	Key	PE	SEP	DCI	CCC	ILCS
23	Two-point item: **Part A:** B (1 point) **Part B:** decompos-ers (1 point)	5-LS2-1	2. Developing and Using Mod-els	LS2.A Interde-pendent Rela-tionships in Eco-systems	4. Systems and System Models	Develop a model to de-scribe the movement of matter among plants, ani-mals, decomposers, and the environment.
24	**First drop-down menu:** above the shoulder **Second drop-down menu:** below the waist (1 point)	4-PS4-1	2. Developing and Using Mod-els	PS4.A Wave Properties	1. Patterns	Select the components to develop a wave model that illustrates/explains the vol-ume level of sound waves.
25	Fourth and fifth op-tions (1 point)	5-PS1-3	3. Planning and Carrying Out In-vestigations	PS1.A Structure and Properties of Matter	3. Scale, Proportion, and Quantity	Select which data are use-ful to identify the physical properties of the mate-rial(s).
26	C (1 point)	4-LS1-1	7. Engaging in Argument from Evidence	LS1.A Structure and Function	4. Systems and System Models	Identify the correct claim that was missing from the argument about the struc-tural function of cacti.
27	A (1 point)	3-LS3-1	4. Analyzing and Interpreting Data	LS3.B Variation of Traits	1. Patterns	Identify the patterns in the variation between the par-ents and the offspring.

Item metadata table continuation showing items 28–29

Item	Key	PE	SEP	DCI	CCC	ILCS
28	First, third, and fifth options (1 point)	3-LS3-2	6. Constructing Explanations and Designing Solutions	LS3.B Variation of Traits	2. Cause and Effect	Use data to refute an explanatory account of a different dairy production between cattle ranches.
29	Exemplars and rubric provided below.	3-LS3-1	4. Analyzing and Interpreting Data	LS3.B Variation of Traits	1. Patterns	Identify patterns in the data about production rates in different cattle ranches.

Exemplars and rubric for item 29:

2 point

Exemplar(s):

Cows A, B, C at the McCoy farm made less milk in April than in March while at the Origin farm, while cows at the Kim farm made more milk in April than at the Origin farm.

OR

Cows A, B, and C made more milk in March while cows D, E, and F made less milk in March. The Kim farm cows made more milk in April, while the McCoy cows made less milk in April.

OR

Rubric continues on the next page.

Rubric continues from previous page.

Cows A, B, and C made less milk at the McCoy farm than at the Origin farm and Cows D, E, and F produced more milk at the Kim farm than at the Origin farm.

Rubric:

The response includes that the amount of milk produced by Cows A, B, and C went down from March to April.

AND

The response includes that the milk produced by Cows D, E, and F went up from March to April.

NOTE: Responses that reference the name of the farms, without a reference to the months, should receive score points as shown in the third exemplar.

1 point

Exemplar(s):

The amount of milk that cows A, B, and C made went down in April when compared to March.

OR

Cows D, E, and F made more milk in April than they did in March.

OR

Cows at the McCoy farm produced less milk than at the Origin farm.

OR

Rubric continues on the next page.

Rubric continues from previous page.

Cows at the Kim farm made more milk in April than they did when they were at the Origin farm.

Rubric:

The response includes that the amount of milk produced by Cows A, B, and C went down from March to April.

OR

The response includes that the milk produced by Cows D, E, and F went up from March to April.

0 point

Exemplar(s):

The cows at the McCoy farm didn't produce any milk in April.

OR

Cows A, B and C made more milk when they were with Cows D, E and F.

OR

They should not have moved the cows to a different farm.

OR

*&YTT%$#$D

Rubric continues on the next page.

Rubric continues from previous page.

OR

I don't know; I was never taught this.

Rubric:

0-point should be awarded if a student attempts to answer the prompt but the response is incorrect or too vague (insufficient information provided) to receive credit

A score of 0 should also be given to responses that consist only of:

No relevant content provided

- no response is provided (e.g., blank)

- random keystrokes or nonsense verbiage

- punctuation mark(s) (e.g., ".")

Student's opinion of the test

Direct copy of the stimulus without any attempt to answer

Opinions or comments about random topics

I don't know, IDK (without further elaboration)

Responses that go on to provide an answer to the prompt should be scored based on the relevant part of the response.

Item metadata table continuation showing items 30–35

Item	Key	PE	SEP	DCI	CCC	ILCS
30	D (1 point)	3-LS3-2	6. Constructing Explanations and Designing Solutions	LS3.A Inheritance of Traits	2. Cause and Effect	Make a qualitative conclusion regarding the relationships between dependent and independent variables based on data from dairy production ranches.
31	**First drop-down menu:** McCoy **Second drop-down menu:** April (1 point)	3-LS3-2	6. Constructing Explanations and Designing Solutions	LS3.A Inheritance of Traits	2. Cause and Effect	Make a qualitative conclusion regarding the relationships between dependent and independent variables in a dairy ranch.
32	**First drop-down menu:** hydrosphere **Second drop-down menu:** geosphere (1 point)	5-ESS2-1	2. Developing and Using Models	ESS2.A Earth Materials and Systems	4. Systems and System Models	Identify the two ecosystems contributing most to the excavation of a fossil.
33	changed over time (1 point)	4-ESS1-1	6. Constructing Explanations and Designing Solutions	ESS1.C The History of Planet Earth	1. Patterns	Describe the reasoning for how the data support an explanation of marine fossils found in a terrestrial location.
34	C (1 point)	4-ESS1-1	6. Constructing Explanations and Designing Solutions	ESS1.C The History of Planet Earth	1. Patterns	Describe the reasoning to support an explanation of fossil deposition and stratigraphy.
35	D (1 point)	4-ESS1-1	6. Constructing Explanations and Designing Solutions	ESS1.C The History of Planet Earth	1. Patterns	Identify data that support the explanation of fossil deposition.

Item metadata table continuation showing item 36

Item	Key	PE	SEP	DCI	CCC	ILCS
36	Exemplars and rubric provided below.	4-ESS1-1	6. Constructing Explanations and Designing Solutions	ESS1.C The History of Planet Earth	1. Patterns	Describe the reasoning for how the data support an explanation of the law of superposition and stratigraphy.

Exemplars and rubric for item 36:

2 point

Exemplar(s):

The marine fossil layer of rock is older than the land fossil layer because the marine fossils are in the lower layer of rock. The landscape where the rock was formed changed from water to land.

OR

The rock layer with the marine fossils is older because it's at the bottom. When the lower layer of rock was forming the area was an ocean, but it changed to land over time.

Rubric:

The response includes that the rock layer with marine fossils is older than the layers with land fossils.

AND

The response includes that the landscape where the rock formed changed from being an ocean to a land environment.

Rubric continues on the next page.

Rubric continues from previous page.

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1 point

Exemplar(s):

The bottom layer of rock is the oldest.

OR

The rock layer with the marine fossils is older because it was formed first.

OR

The earth was once an ocean when the fossils formed and it is now land, so that's why we find ocean fossils on the land.

Rubric:

The response includes that the rock layer with the marine fossils is older than the layers with the land fossils.

OR

The response includes that where the rock formed was an ocean and it changed to land.

0 point

Exemplar(s):

The rocks were moved by plate tectonics.

OR

Rubric continues on the next page.

Rubric continues from previous page.

The rock layers have all kinds of fossils in them.

OR

The land fossils are older because they are found in the higher layers.

OR

*&YTT%$#$D

OR

I don't know; I was never taught this.

Rubric:

0-point should be awarded if a student attempts to answer the prompt but the response is incorrect or too vague (insufficient information provided) to receive credit

A score of 0 should also be given to responses that consist only of:

No relevant content provided

- no response is provided (e.g., blank)

- random keystrokes or nonsense verbiage

- punctuation mark(s) (e.g., ".")

Student's opinion of the test

Rubric continues on the next page.

Rubric continues from previous page.

Direct copy of the stimulus without any attempt to answer

Opinions or comments about random topics

I don't know, IDK (without further elaboration)

Responses that go on to provide an answer to the prompt should be scored based on the relevant part of the response.

Additional annotated samples for this prompt can be found at https://www.caaspp.org/ta-resources/practice-training.html.

Item metadata table continuation showing items 37–39

Item	Key	PE	SEP	DCI	CCC	ILCS
37	**Row 1:** Condition that stays the same **Row 2:** Variable students change **Row 3:** Variable measured (1 point)	4-PS3-1	6. Constructing Explanations and Designing Solutions	PS3.A Definitions of Energy	5. Energy and Matter	Use observations to make a qualitative conclusion about the relationship between dependent and independent variables of the experiment relating distance and speed.
38	D (1 point)	4-PS3-1	6. Constructing Explanations and Designing Solutions	PS3.A Definitions of Energy	5. Energy and Matter	Use the observations or data and scientific concepts about energy to support a conclusion about how the speed of the object is related to its energy.
39	Second and third options (1 point)	4-PS3-2	3. Planning and Carrying Out Investigations	PS3.B Conservation of Energy and Energy Transfer	5. Energy and Matter	Identify the transfer/ transformations of energy of object collisions under investigation.

Item metadata table continuation showing items 40–41

Item	Key	PE	SEP	DCI	CCC	ILCS
40	A (1 point)	4-PS3-1	6. Constructing Explanations and Designing Solutions	PS3.A Definitions of Energy	5. Energy and Matter	Use the observations or data and scientific concepts about energy to support a conclusion about how the speed of the object is related to its energy.
41	Exemplars and rubric provided below.	4-PS3-1	6. Constructing Explanations and Designing Solutions	PS3.A Definitions of Energy	5. Energy and Matter	Select or complete a model that is the best representative explanation of how velocity and energy relate.

Exemplars and rubric for item 41:

2 point

Exemplar(s):

I would choose the 3.25 m high ramp because it's the highest and it will make the ball go the fastest down the ramp.

OR

The 3.25-meter ramp should be used. It is the highest and will give the ball the most speed going down the ramp.

OR

There is more kinetic energy with a ball going down the 3.25m ramp.

Rubric continues on the next page.

Rubric continues from previous page.

Rubric:

The response includes that the 3.25m ramp should be chosen.

AND

The response includes that it will give the ball the most speed.

NOTE: Responses must answer the prompt and choose a ramp height. If no ramp is chosen, but a correct explanation is given that would score 1 point, not 2.

1 point

Exemplar(s):

The ramp I would choose would be the tallest one which is the 3.25-meter-high ramp.

OR

The higher the ramp, the faster the ball will go down it.

OR

The higher the ramp, the more kinetic energy the ball has.

Rubric continues on the next page.

Rubric continues from previous page.

Rubric:

The response includes that the 3.25m ramp should be chosen.

OR

The response includes that it will give the puck the most speed.

0 point

Exemplar(s):

Kinetic energy will be the same no matter what ramp is chosen.

OR

I think the ramp should be the 2.25m. Its right in the middle.

OR

It depends on how hard they push the puck to get it moving down the ramp.

OR

*&YTT%$#$D

OR

I don't know; I was never taught this.

Rubric continues on the next page.

Rubric continues from previous page.

Rubric:

0-point should be awarded if a student attempts to answer the prompt but the response is incorrect or too vague (insufficient information provided) to receive credit

A score of 0 should also be given to responses that consist only of:

No relevant content provided

- no response is provided (e.g., blank)

- random keystrokes or nonsense verbiage

- punctuation mark(s) (e.g., ".")

Student's opinion of the test

Direct copy of the stimulus without any attempt to answer

Opinions or comments about random topics

I don't know, IDK (without further elaboration)

Responses that go on to provide an answer to the prompt should be scored based on the relevant part of the response.

Item metadata table continuation showing item 42

Item	Key	PE	SEP	DCI	CCC	ILCS
42	less (1 point)	4-PS3-2	3. Planning and Carrying Out Investigations	PS3.A Definitions of Energy	5. Energy and Matter	Identify the transfer/ transformations of kinetic energy under investigation when rate of friction changes.